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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,383	03/05/2002	Lifeng Zhao	INTV.013A	8453

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EXAMINER	
AN, SHAWN S	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/092,383	ZHAO ET AL.	
	Examiner	Art Unit	
	Shawn S An	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-23* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/22 10/7 9/4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Restriction/Election

1. Applicant's election without traverse of species corresponding to claims 1-23 as filed on 10/01/2004 has been acknowledged. Furthermore, claims 24-34 have been canceled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 5, 7-8, 12-13, 15-17, and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Uz et al (5,801,779).

Regarding claims 1 and 12, Uz et al discloses a bit allocation method for use with video (sequences) clip scenes, comprising:

receiving a clip (GOP, group of pictures) budget for at least a first clip (col. 5, lines 63-67);

determining a scene quantity (activity) for the first clip (col. 11, lines 43-48);

determining a quantity of predicted (P) frames in a first scene in the first clip (col. 6, lines 2-4);

calculating a bit budget for the first scene based at least part on the scene quantity (activity) for the first clip, the first clip bit budget, a quantity of intracoded (I) and predicted (P) frames in the first scene (col. 5, lines 63-67; col. 6, lines 1-14).

calculating a bit budget for a first scene, corresponding frames including at least a first frame, within the first scene, and corresponding macroblocks within the first frame (col. 5, lines 63-67; col. 6, lines 1-14).

Regarding claim 2, Uz et al discloses in the first clip beginning with an intracoded (I) frame (col. 12, lines 4-11).

Regarding claims 5 and 13, Uz et al discloses GOP being a first scene (col. 5, lines 63-66).

Regarding claim 7, Uz et al discloses adjusting a Q parameter for a predicted frame in the first scene based on the bit-budget for the first scene and current bit usage (col. 12, lines 23-37; col. 13, eq. 1).

Regarding claim 8, Uz et al discloses the adjustment of the Q parameter being limited to a first range (Fig. 5).

Regarding claims 15 and 17, Uz et al discloses the bit budget based at least in part on a complexity (activity) and a buffer status determination for the first scene (col. 6, lines 1-14).

Regarding claim 16, Uz et al discloses the bit budget based at least in part on a complexity (activity) determination for the first scene (col. 6, lines 1-14) and an average complexity of a plurality of scenes (col. 11, lines 43-48).

Regarding claim 21, Uz et al discloses the bit budget based at least in part on the bit budge, a quantity of bits used for already coded frames (Fig. 1B, 50'; col. 13, eq. 1, Sj), a complexity, and complexity of already coded frames (50') in the first scene (col. 6, lines 1-14; col. 12, lines 43-48).

Regarding claim 22, Uz discloses all of the macroblocks within the first frame are quantized using quantization parameter value (col. 12, lines 23-37).

Regarding claim 23, Uz discloses a quantization parameter is varied (up-dated) for the first frame macroblocks based at least in part on current bit usage and budgeted bit usage (col. 6, lines 1-14; col. 12, lines 32-37; col. 13, eq. 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4, 6, 9-11, 14, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uz et al (5,801,779).

Regarding claims 4, 6, and 14, Uz et al does not specifically disclose GOV being the first scene.

However, the conventional video signal encoder incorporating such as an MPEG-4 refers GOV as a group of video object plane(s) (VOP). However, the term VOP (e.g, I-VOP, P-VOP) can also refer to a frame (e. g, I frame, P frame), which is a standard term in MPEG-2. In MPEG-2, group of frames/pictures are referred as GOP.

Furthermore, Uz discloses GOP being a first scene (col. 5, lines 63-66).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a bit allocation method for use with video clip scenes as taught by Uz et al to incorporate the concepts as above so as to employing a bit allocation method utilizing standards of the MPEG-4.

Regarding claims 9-10, Uz et al discloses adjusting a Q parameter for a first predicted (P) frame in the first scene (col. 12, lines 23-37).

Uz et al fails to disclose upwards/downwards at least partly in response to determining that current bit usage is greater/less then a value related to the bit budget for the first scene, respectively.

Uz et al also discloses that Q parameter is determined according to f(bit budget, TAi (total activity)). See bit budget calculation (col. 13, eq. 1).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a bit allocation method for use with video clip scenes as taught by Uz et al

to incorporate the concepts as above so as to adjust the Q parameter for a first predicted (P) frame in the first scene upwards/downwards at least partly in response to determining that current bit usage is greater/less then a value related to the bit budget for the first scene, respectively, for obtaining subsequent highly accurate Q parameters for efficient encoding.

Regarding claim 11, Uz et al discloses that the rate control Q scale factor is determined according to f(bit budget, TAi (total activity)) (col.12, lines 32-37).

However, Uz et al does not specifically disclose adjusting a Q parameter for a macroblock based at least part on a channel rate.

Furthermore, Uz et al discloses determining bit budget (BBi) for I frame is based on Q (Qj) parameter and a channel rate (R_{eff}) (col. 13, Eq. 1).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a bit allocation method for use with video clip scenes as taught by Uz et al to incorporate the concepts as above so as to adjust Uz et al's Q parameter for the macroblock based at least part on the channel bit rate, since change in the channel rate would cause the bit budget to change, which in turn would cause change in the Q parameter.

Regarding claim 18, Uz et al discloses the bit budget for the first frame being based on quantization parameter-variant criteria (col. 12, lines 23-37).

Furthermore, the Examiner takes official notice that setting up the quantization parameter with invariant criteria is well known in the art.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a bit allocation method for use with video clip scenes as taught by Uz et al to incorporate the quantization parameter with invariant criteria as an alternative design choice for an efficient way to control/allocate the bit rate.

Regarding claim 19, Uz et al does not specifically disclose the bit budge for the first frame being based at least in part on how many texture bits and motion vector bits there are for the first frame.

However, the Examiner takes official notice that allocating bit budget based at least in part on how many texture bits and motion vector bits there are is conventionally well known in the art. Note: (6,351,491; 6,192,081).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a bit allocation method for use with video clip scenes as taught by Uz et al to incorporate the concepts as above so that the bit budge for the first frame is based at least in part on how many texture bits and motion vector bits there are for the first frame as an alternative design choice for an efficient way to control/allocate the bit rate.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uz et al as applied to claim 12 above, and further in view of Chiang et al (6,243,497 B1).

Regarding claim 20, Uz et al does not specifically disclose the bit budge for the first frame being based on a mean absolute difference (MAD) for the first frame relative to the second frame.

However, Chiang et al teaches the bit budge for the first frame being based on a mean absolute difference (MAD) for the first frame relative to the second frame (col. 6, lines 1-14).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a bit allocation method for use with video clip scenes as taught by Uz et al to incorporate the concepts as above as taught by the Chiang et al as an efficient way to control/allocate the bit rate.

Allowable Subject Matter

7. Claim 3 is objected to as being dependent upon a rejected base claim1, but would be allowable:

if claim 3 is rewritten in independent form including all of the limitations of the base claim 1.

Dependent claim 3 recites novel features comprising calculating bit budget based at least in part by multiplying the clip bit budget by a sum of the number of predicted frames and a first constant, and dividing by a sum of the quantity of

intracoded and predicted frames in the clip and the number of clip scenes multiplied by a second constant.

The art of records fail to anticipate or make obvious the novel features.

Accordingly, if the amendments are made to the claims listed above, and if rejected claims are canceled, the application would be placed in condition for allowance.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

A) Lee et al (6,351,491 B1), Apparatus and method for optimizing the rate control for multiscale entropy encoding.

B) Chiang et al (6,192,081), Apparatus and method for selecting a coding mode in a block-based coding system.

C) Zhang et al (6,181,711 B1), System and method for transporting a compressed video data bit stream over a communication channel.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn An whose telephone number (703) 305-0099 and schedule are Tuesday-Friday.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

11. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

SSA
Primary Patent Examiner
11/18/04